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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,363	03/17/2004	Jingyu Lian	2004P51100US/INTECH 3.0-0	5822
48154	7590	06/30/2005	EXAMINER	
SLATER & MATSIL LLP 17950 PRESTON ROAD SUITE 1000 DALLAS, TX 75252			TRAN, THANH Y	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/803,363

Applicant(s)

LIAN ET AL.

Examiner

Thanh Y. Tran

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 7-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/18/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

Applicant's election of Species I (claims 1-6) in the reply filed on 6/7/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

#### *Claim Objections*

1. Claim 1 is objected to because of the following informalities:

As to claim 1: claim 1 is unclear, it recites "*said adhesion layer being selected from the group consisting of Si, Al, Al plus TiN, and SiO<sub>2</sub>*", however, the adhesion layer could not include all combined materials (Si, Al, Al plus TiN, and SiO<sub>2</sub>) together. For purposes of examining this claim, the examiner will assume the above quoted limitation to mean: "*said adhesion layer being selected from the group consisting of at least one of Si, Al, Al plus TiN, and SiO<sub>2</sub>*".

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashida (U.S. 6,365,420) in view of Honda et al (U.S. 6,645,632).

As to claim 1, Ashida discloses in figure 5 a method of fabricating a high dielectric constant (high-k) capacitor structure, the method comprising: depositing an adhesion layer (31) on a SiO<sub>2</sub> substrate (30) (see col. 6, lines 62-65); and depositing a noble metal bottom electrode ("lower electrode" 32) on the adhesion layer (31).

Ashida does not disclose the adhesion layer being selected from the group consisting of at least one of Si, Al, Al plus TiN, and SiO<sub>2</sub>.

Honda et al discloses in col. 12, lines 50-56 an adherend material including Al ("aluminum"). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method of Ashida by using Al material for an adhesion layer as taught by Ashida for providing a good adhesion.

As to claim 2, Ashida discloses in figure 5 a method of fabricating a high dielectric constant (high-k) capacitor structure, further comprising: depositing a high-k dielectric material ("high dielectric film" 33) (col. 7, lines 34-36) on the bottom electrode ("lower electrode" 32); depositing a top electrode ("upper electrode" 34) on the high-k dielectric layer ("high dielectric film" 33); patterning the top electrode ("upper electrode" 34) and the high-k dielectric layer ("high dielectric film" 33); depositing an insulation layer ("insulation film" 35) thereon; opening vias ("via holes") (col. 7, lines 12-21) to the top electrode ("upper electrode" 34) in the insulation layer ("insulation film" 35); depositing a metal pad layer ("wiring" 36) (col. 7, lines 22-31) in the vias and atop the insulation layer ("insulation film" 35); and patterning the metal pad layer ("wiring" 36) (col. 7, lines 22-31).

As to claim 3, Ashida discloses in figure 5 a method of fabricating a high dielectric constant (high-k) capacitor structure, wherein the bottom electrode ("lower electrode" 32) is Pt (see col. 7, line 3).

As to claim 4, Ashida discloses in figure 5 a method of fabricating a high dielectric constant (high-k) capacitor structure, wherein the top electrode ("upper electrode" 34) is Pt ("platinum") (see col. 7, lines 9-12).

As to claim 5, Ashida discloses in figure 5 a method of fabricating a high dielectric constant (high-k) capacitor structure, wherein the insulation layer ("insulation film" 35) is SiO<sub>2</sub> ("silicon oxide") (col. 7, lines 14-17).

As to claim 6, Ashida discloses in figure 5 a method of fabricating a high dielectric constant (high-k) capacitor structure, wherein the metal pad layer ("wiring" 36) is Al ("aluminum") (col. 7, lines 22-31).

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tsunemine et al (U.S. 6,501,113) discloses semiconductor device with capacitor using high dielectric constant film or ferroelectric film.

### **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on M-F (9-6:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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